

## TOY VEHICLE

### Background to the Invention

This invention relates to a toy vehicle comprising sound-producing means  
5 arranged to replay recorded music or other sounds in a novel and amusing manner.

### Summary of the Invention

The invention provides a toy vehicle comprising sound-producing means  
10 arranged to replay recorded sounds and means for activating the sound-producing means depending on the motion of the vehicle.

In a particular embodiment of the invention, a first sound, such as a sample from a recording of music, is emitted if the vehicle is moved forwards and a  
15 second sound is emitted if the vehicle is moved backwards. These sounds may be arranged to be emitted for as long as the vehicle is in motion. Thus an effect similar to the "scratching" of a vinyl record by moving the record back and forth on a record player is obtained.

20 A further sound, such as a musical background track, may be arranged to be replayed for a set period of time commencing when the vehicle starts moving.

The sound-producing means may be arranged to emit one of a plurality of  
25 sets of recorded sounds, selectable by means of a further switch.

The sound activating means may comprise a rocker switch means urged, at least indirectly, by a wheel of the vehicle to close a first electrical circuit when the wheel moves in one direction and a second electrical circuit when the  
30 vehicle moves in the opposite direction.

The vehicle may have an on/off switch for activating the vehicle and preventing battery drain.

5    Brief Description of the Drawings

In order that the invention may be more readily understood, reference will now be made, by way of example only, to the accompanying drawings, in which:

- 10   Figure 1 is a perspective view of a toy car according to an embodiment of the invention;

Figure 2 is a schematic sectional view of the car of Figure 1 showing a switch;

- 15   Figures 3 and 4 show the switch of Figure 2 in more detail in different positions; and

Figure 5 is a block diagram of a circuit for the toy car.

20   Detailed Description of Particular Embodiments

Figure 1 shows a toy car having wheels 1. Within the car is a sound unit 2, shown schematically in Figure 5, connected to a loudspeaker 3.

- Figures 2 to 4 show a switch for selectively activating the playback of  
25   different samples from the sound unit. A rocker 4 is pivotably mounted above a small wheel 5, in turn mounted on an axle, here the rear axle, of the car. The small wheel 5 has a tyre made of a material such that it will not grip the rocker 4 unless pressure is exerted on the car from above. The ends of the rocker 4 are arranged below switches 6, 7 of two circuits having contacts that  
30   are biased into an open position. When pressure is exerted on the car and the

car is moved backwards, the rocker pivots and causes switch 6 to close as shown in Figure 4. Conversely, when pressure is exerted on the car and the car is moved backwards, the rocker pivots and causes switch 7 to close.

- 5 As shown in Figure 5, music samples are digitally recorded at the sound unit 2. A music loop 8 is a phrase of music which can be repeated to give a continuous background track. "Scratch" samples 9 and 10 are triggered by the backwards and forwards movement of the car respectively.
- 10 Operation of the sound unit starts when the car is pressed down and moved either backwards or forwards. In either case this triggers a timer/oscillator circuit 11 which sends an oscillating signal to the music loop segment 8 of the sound unit 2. The timer/oscillator circuit emits this signal for a pre-set period of time, e.g. 20 seconds, during which time the music loop will be
- 15 played if no further inputs are made. Every time either switch is operated, the timer is reset and will run for the pre-set period of time again, so that whilst the car is being operated the timer is always being reset and the music will not stop until the car has not been operated for the pre-set period of time. The music loop is edge-triggered by the oscillating signal so that once
- 20 it is triggered by an input it will play one cycle of the loop regardless of whether the input signal remains "on" or not. The purpose of the oscillating signal is to re-trigger the music loop at the end of this cycle without any delay. As an example, a frequency of 50 Hz has been found to work well.
- 25 The two "scratch" samples are operated by the switches 6, 7 respectively and are level activated so that the switch contacts must remain closed for the sample to play. This means that the car must be held in the backwards or forwards position for the sample to play and when it is released the sample will stop. If the car is operated again in the same direction the sample will
- 30 play again from the beginning. In this way, "scratch" samples can be played

for longer or shorter periods and by pushing the car backwards and forwards they can be alternated and repeated.

The samples can be preset in the toy vehicle. Alternatively, the vehicle can  
5 include means for recording the samples, e.g. from a computer where they have been downloaded or from a live sound source.

The term "vehicle" as used herein is intended to include objects mounted on wheels, such as robots, figures, animals, aircraft etc. as well as cars and  
10 trucks.

All forms of the verb "to comprise" used in this specification have the meaning "to consist of or include".